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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/660,169

09/11/2003

Robert D. Nuckolls

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EXAMINER

PAN, DANIEL H

ART UNIT

PAPER NUMBER

2183

DATE MAILED: 08/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/660,169	NUCKOLLS ET AL.	
	Examiner	Art Unit	
	Daniel Pan	2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20-44 is/are rejected.
- 7) ☒ Claim(s) 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. Claims 1-44 remain for examination.
2. Claims 1-7,9-12,14,18,20-28, 30-34,36-37, 39-40,42 , 44 are rejected under 35 U.S.C. 102(b) as being anticipated by White (5,996,071).
3. As to the amended claim 18, the change is directed to language, does not substantially affect the scope of the invention. It is directed to the least significant bit of one or more obtained values already set forth in the claim 17.
4. As to newly amended claim 25, White taught the entries in the branch target cache including for each entry the L1 cache entry index (the set number), byte location, and the way number for the cache line containing the target instruction in the L1 cache (see fig.6c, col.6, lines 64-67, col.7, line s1-6). Therefore, each entry (branch prediction qualifier indication) was aliased to multiple branch direction indication (see the set number, byte location, and way number).
5. Claims 8, 13, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over White (5,996,071) in view of Jain et al. (5,553, 255).
6. Claims 35,41 are rejected under 35 U.S.C. 103(a) as being unpatentable over White (5,996,071) in view of Smith (4,370,711).
7. Claim 38, 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over White (5,996,071) in view of Chang (5,687,360) .

8. The rejections are maintained and incorporated by reference the last Office action on 03/14/06.

9. The response filed by applicant on 06/14/06 has been fully considered but is not persuasive because it does not comport with a reasonable reading of the reference.

10. In the remarks, applicant argued that :

a) Fig.2A show 204 is L1 cache which is distinct from branch unit 250;

b) White does not disclose greater number of branch direction indication entries than branch prediction qualifier indication entries;

c) White did not teach aliasing a branch prediction qualifier indication to multiple branch direction indication;

d) White did not teach sharing a branch prediction qualifier indication between multiple direction indications.

11. As to a), applicant only claims "a branch prediction storage". No structure of the branch prediction storage has been recited into the claim. The examiner recited fig.6,b,c as the branch prediction storage (see page 2 ,paragraph 3 of the last Office action).

White's cache 204 and branch unit 250 (252) combined are a "branch prediction storage" because White taught the 204 cache in fig.6 b was the organization of an exemplary branch target cache as 4-way set associative, and the fig.6 c illustrated the entries in the branch target cache including for each entry the L1 cache entry index (the

Art Unit: 2183

set number), byte location, and the way number for the cache line containing the target instruction in the L1 cache (see col.6, lines 64-67, col.7, line s1-6). Therefore, the L1 cache 204 branch target cache and 252 branch target cache are a branch prediction storage. Further evidence also shows that the 204 L1 target cache and 252 target cache are interconnected by delicate buses (see col.11, lines 36-43). Therefore, L1 204 and 252 had dedicated connection and worked together as one prediction storage unit.

12. As to b), with 204 and 252 as one branch prediction unit, White disclosed greater number (256 entries in L1 branch target cache 204) of branch direction indication entries than branch prediction qualifier indication entries (128 entries in branch target cache 252).

13. As to c),d), White taught the entries in the branch target cache including for each entry the L1 cache entry index (the set number), byte location, and the way number for the cache line containing the target instruction in the L1 cache (see fig.6c, col.6, lines 64-67, col.7, line s1-6). Therefore, each entry (branch prediction qualifier indication) was aliased (or shared by) to multiple branch direction indication (see the set number, byte location, and way number).

14. Claim 19 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the

Art Unit: 2183

base claim and any intervening claims. None of the prior art of record further teaches the at least some of the least significant bits of the value are unchanged from the instruction instance identifier.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Pan whose telephone number is 571 272 4172.

The examiner can normally be reached on M-F from 8:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chan, can be reached on 571 272 4162. The fax phone number for the organization where this application or proceeding is assigned is 703 306 5404.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

Art Unit: 2183

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

21 Century Strategic Plan


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PRIMARY EXAMINER
GROUP